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## NOTICE OF ALLOWANCE AND FEE(S) DUE

441 7590 09/16/2009

SMITH, GAMBRELL & RUSSELL  
1130 CONNECTICUT AVENUE, N.W., SUITE 1130  
WASHINGTON, DC 20036

EXAMINER

FORD, NATHAN K

ART UNIT

PAPER NUMBER

1792

DATE MAILED: 09/16/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,050

07/14/2006

Manabu Amikura

33082R337

2437

TITLE OF INVENTION: PROCESSING APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/16/2009

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

#### I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

441 7590 09/16/2009

**SMITH, GAMBRELL & RUSSELL**  
1130 CONNECTICUT AVENUE, N.W., SUITE 1130  
WASHINGTON, DC 20036

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## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,050	07/14/2006	Manabu Amikura	33082R337	2437

TITLE OF INVENTION: PROCESSING APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/16/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
FORD, NATHAN K	1792	156-345340

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_
- 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

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This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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10/586,050	07/14/2006	Manabu Amikura	33082R337	2437
441	7590	09/16/2009	EXAMINER	
SMITH, GAMBRELL & RUSSELL 1130 CONNECTICUT AVENUE, N.W., SUITE 1130 WASHINGTON, DC 20036			FORD, NATHAN K	
			ART UNIT	PAPER NUMBER
			1792	
DATE MAILED: 09/16/2009				

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/586,050	AMIKURA, MANABU	
	<b>Examiner</b>	<b>Art Unit</b>	
	NATHAN K. FORD	1792	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the proposed claim amendments communicated September 10, 2009.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.

**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. <input type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br/>Paper No./Mail Date ____</li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application</li> <li>6. <input type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date ____.</li> <li>7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other ____.</li> </ol> |
|--|---|

/N. K. F./  
Examiner, Art Unit 1792

Art Unit: 1792

**DETAILED ACTION***Examiner's Amendment*

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was provided by Tayan Patel on September 10, 2009.

Claims 1, 3, 6, and 8 have been amended as follows:

1. (Currently amended) A processing apparatus including a processing vessel, a mount table arranged in the processing vessel to allow a process object to be placed thereon, and a shower head structure arranged at a ceiling portion of the processing vessel to supply a process gas into an interior of the processing vessel,

wherein the shower head structure includes:

a shower head main body having a generally cup shape, the shower head main body having a bottom wall provided with a plurality of gas injection holes formed therein and a side wall rising from a peripheral portion of the bottom wall, wherein an upper end of the side wall has steps providing ~~at least one projection~~ a plurality of projections;

a head mounting frame arranged at the ceiling portion of the processing vessel to support the shower head main body, the head mounting frame having ~~at least one through-hole~~ a plurality of through-holes into which the ~~projection~~ projections of the side wall of the shower head main body ~~is~~ are respectively inserted, with portions of the side wall other than the ~~projection~~ projections not being inserted into the ~~through-hole~~ through-holes, the ~~through-hole~~ through-holes and the ~~projection~~ projections being configured such that the ~~projection~~ projections are insertable into the ~~through-hole~~ through-holes from a lower side of the head mounting frame, and wherein the head mounting frame is a unitary structure;

a cooling mechanism attached to an upper end portion of ~~the projection~~ at least one of the projections of the side wall of the shower head main body inserted into the through-hole of the unitary head mounting frame and exposed to an exterior of the processing vessel;

screw bolts each extending from the lower surface of the bottom wall of the shower head main body through the bottom wall of the shower head main body, and being in thread engagement with the head mounting frame; and

at least one diffusion chamber forming plate housed in the shower head main body and joined to the head mounting frame, and defining a gas diffusion chamber which is supplied with the process gas and is communicated with the gas injection holes.

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3. (Currently amended) The processing apparatus according to claim 1, wherein ~~the head mounting frame has, as said at least one through hole, a plurality of through holes, the shower head main body has, as said at least one projection, a plurality of projections, the plurality of projections of the side wall of the shower head main body are respectively inserted into the plurality of through holes, and the through-holes are arranged at angular intervals in a circumferential direction.~~

6. (Currently amended) A processing apparatus including a processing vessel, a mount table arranged in the processing vessel to allow a process object to be placed thereon, and a shower head structure arranged at a ceiling portion of the processing vessel to supply a process gas into an interior of the processing vessel,

wherein the shower head structure includes:

a shower head main body having a generally cup shape, the shower head main body having a bottom wall provided with a plurality of gas injection holes formed therein and a side wall rising from a peripheral portion of the bottom wall, wherein an upper end of the side wall has steps providing ~~at least one projection~~ a plurality of projections;

a head mounting frame arranged at the ceiling portion of the processing vessel to support the shower head main body, the head mounting frame having ~~at least one through hole~~ a plurality of through-holes into which the ~~projection~~ projections of the side wall of the shower head main body ~~is~~ are respectively inserted, with portions of the side wall other than the ~~projection~~ projections not being inserted into the ~~through hole~~ through-holes, the ~~through hole~~ through-holes and the ~~projection~~ projections being configured such that the ~~projection~~ projections ~~are~~ is insertable into the ~~through hole~~ through-holes from a lower side of the head mounting frame, and wherein the head mounting frame is a unitary structure and the shower head main body is attached to the unitary head mounting frame such that the ~~projection~~ projections of the side wall of the shower head main body is exposed to an exterior of the processing vessel; and

at least one diffusion chamber forming plate housed in the shower head main body and defining a gas diffusion chamber which is supplied with the process gas and is communicated with the gas injection holes.

8. (Currently amended) The processing apparatus according to claim 6, wherein ~~the head mounting frame has, as said at least one through hole, a plurality of through holes, the shower head main body has, as said at least one projection, a plurality of projections, the plurality of projections of the side wall of the shower head main body are respectively inserted into the plurality of through holes, and the through-holes are arranged at angular intervals in a circumferential direction.~~

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*Allowable Subject Matter*

The following is an examiner's statement of reasons for allowance.

Kuwada fairly teaches a processing apparatus comprising:

- A processing vessel (22);
- A susceptor (28) positioned within the vessel;
- A showerhead with a cup-shaped main body (82), further comprising:
  - A bottom wall (92) provided with a plurality of gas injection holes (94);
  - A side wall (98) extending from a peripheral portion of the bottom wall;
  - Wherein an upper end of the side wall has steps providing a projection (104);
- A unitary head mounting frame (108) arranged at a ceiling portion of the vessel to support the showerhead, further comprising:
  - A through-hole (74) into which the showerhead projection is inserted [0052];
  - Wherein portions (98) of the sidewall other than the projection are not inserted into the through-hole;
  - Wherein the projection is exposed to an exterior of the processing vessel (Fig. 1);
- A cooling mechanism (112, 116) attached to an upper-end portion of the projection [0054];
- A diffusion chamber forming plate (122) housed in the shower head main body [0058].

Kuwada also elaborates an alternative embodiment, delineated by Figure 10, which extends screw bolts (5, 13) from the bottom of the showerhead (11) through its body (7) to threadingly engage the head mounting frame (2a).

Kuwada does not, however, articulate the features of a plurality of projections and a plurality of through holes into which the projections are insertable. Further, Kuwada does not provide motivation for a reconfiguration which could accommodate a plurality of through holes, and the very structure of the apparatus precludes any feasible combination with a secondary reference which might provide motivation for the incorporation of a plurality of through holes and a plurality of projections insertable into the through holes. Lastly, Kuwada's projection cannot be inserted into the through hole from the bottom of the head mounting frame as required by the independent claims; rather, the showerhead is secured within the through hole from above. For these reasons, the prior art, either alone or in combination, does not satisfy the limitations of the applicant's independent claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 1792

Inquiries concerning this communication or earlier communications from the examiner should be directed to Nathan K. Ford whose telephone number is 571-270-1880. The examiner can normally be reached on M-F, 8:30-5:00 EDT. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland, can be reached at 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/N. K. F./

Examiner, Art Unit 1792

/Michael Cleveland/

Supervisory Patent Examiner, Art Unit 1792